

Architecture 100

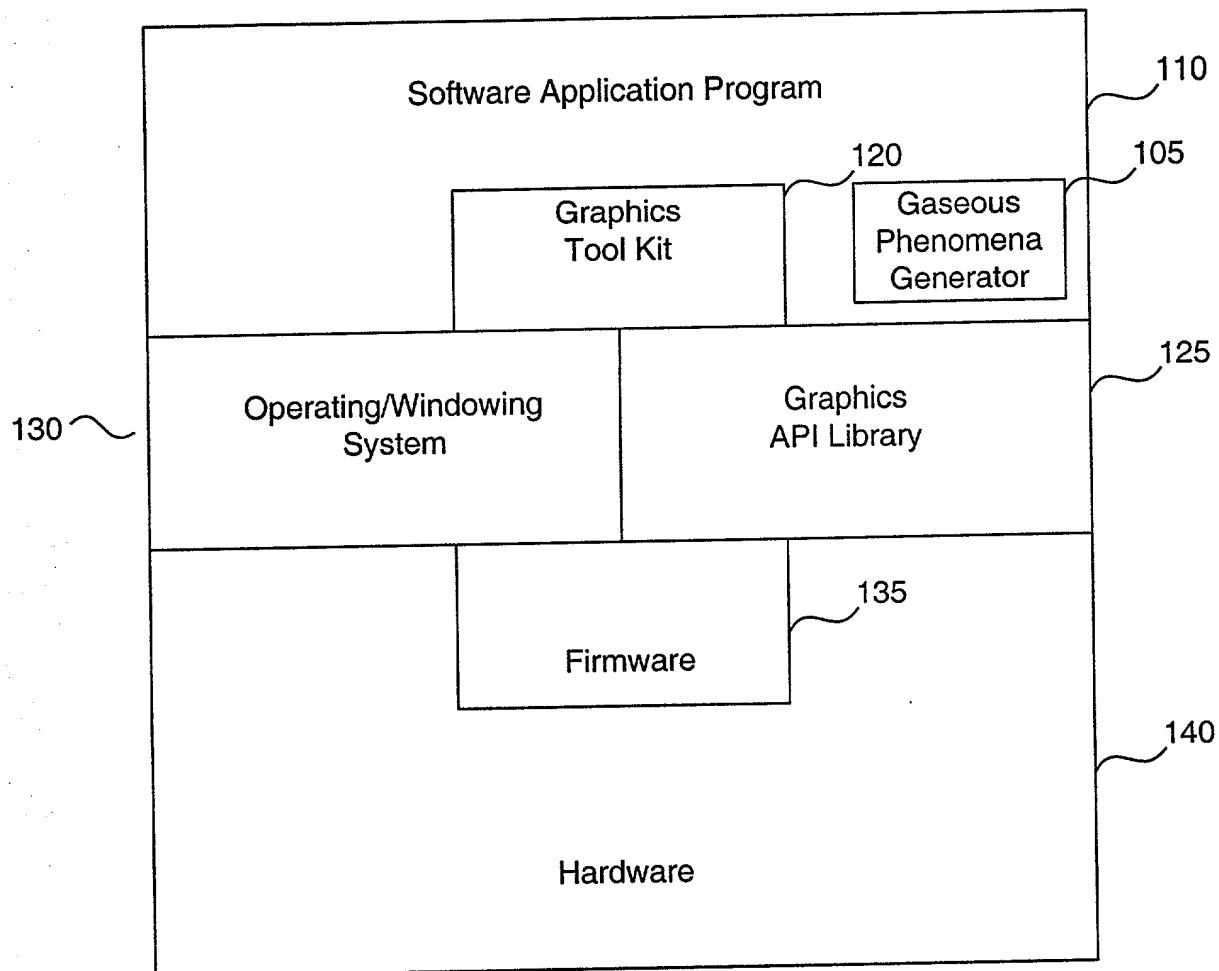


FIG. 1

200

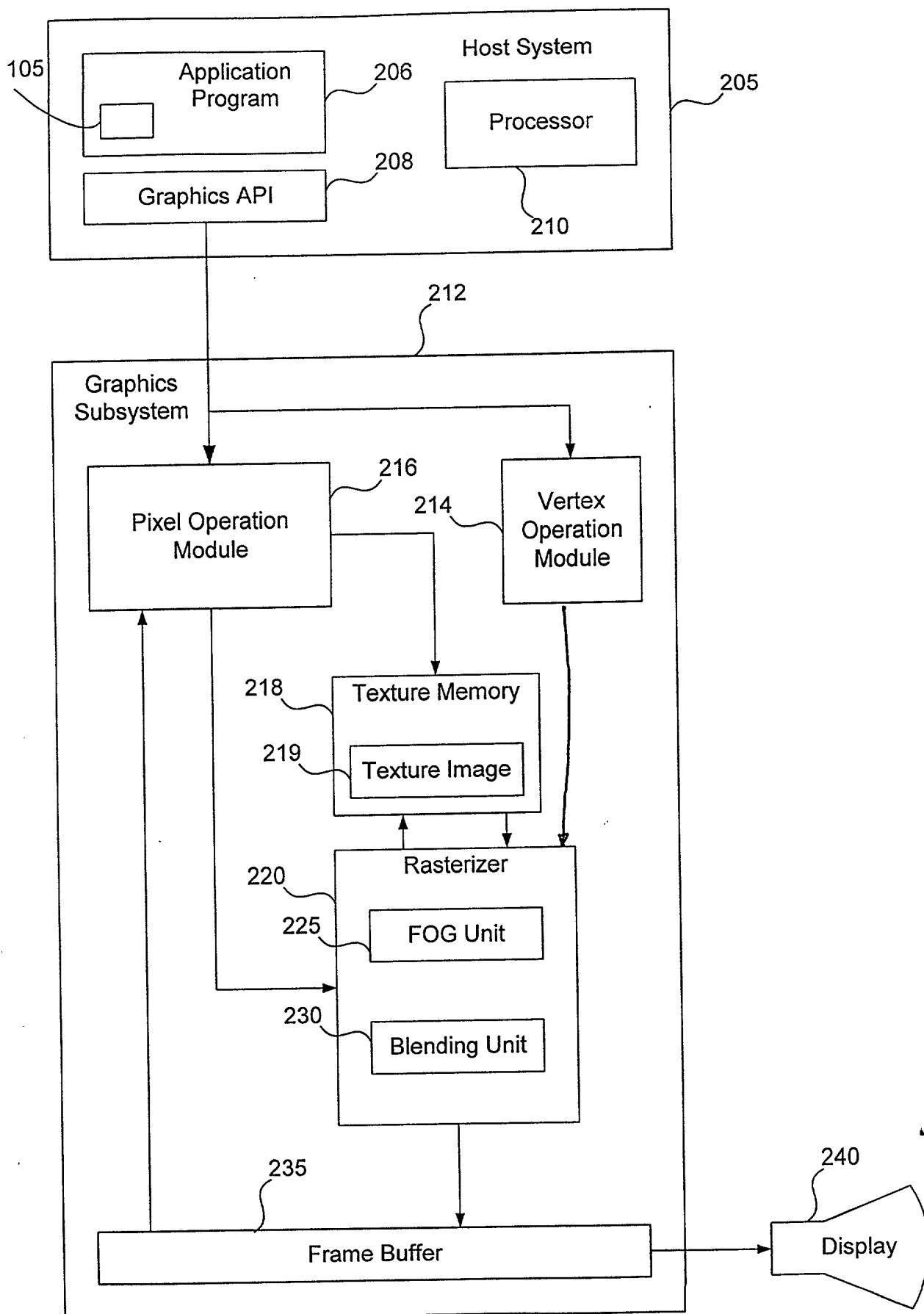
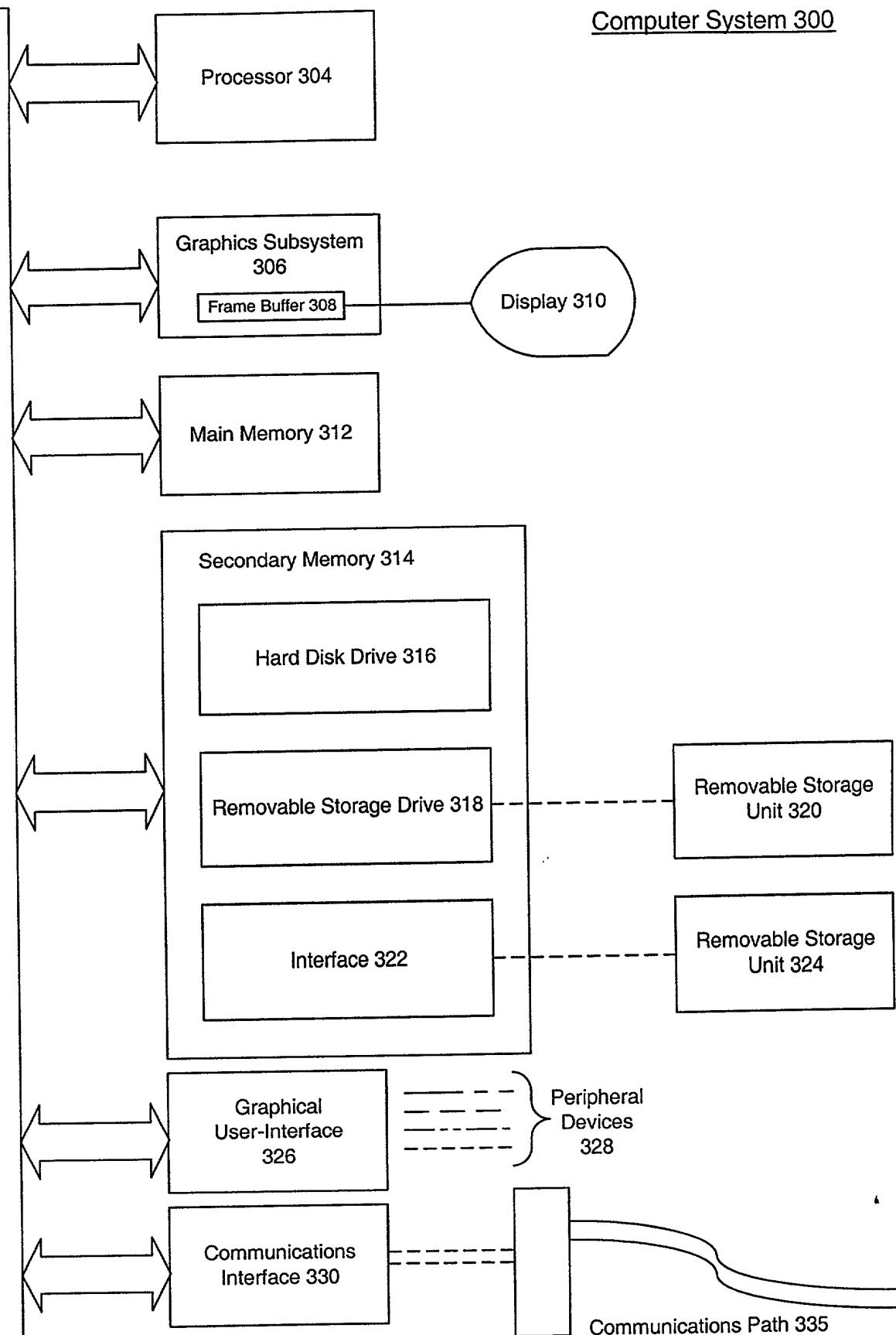


FIG. 2

Computer System 300**FIG. 3**

Routine For Rendering Volumetric Fog or Other Gaseous Phenomena

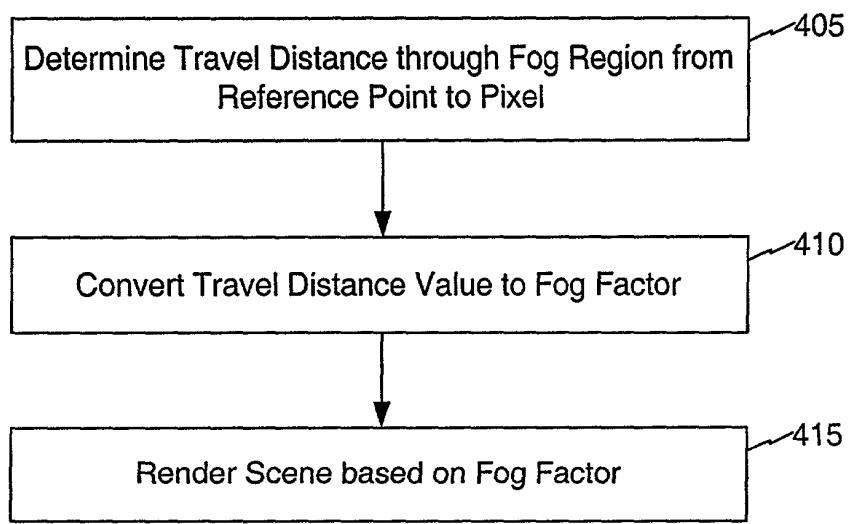


FIG. 4

**Determine Travel Distance through Fog Region
from Reference Point to Pixel**

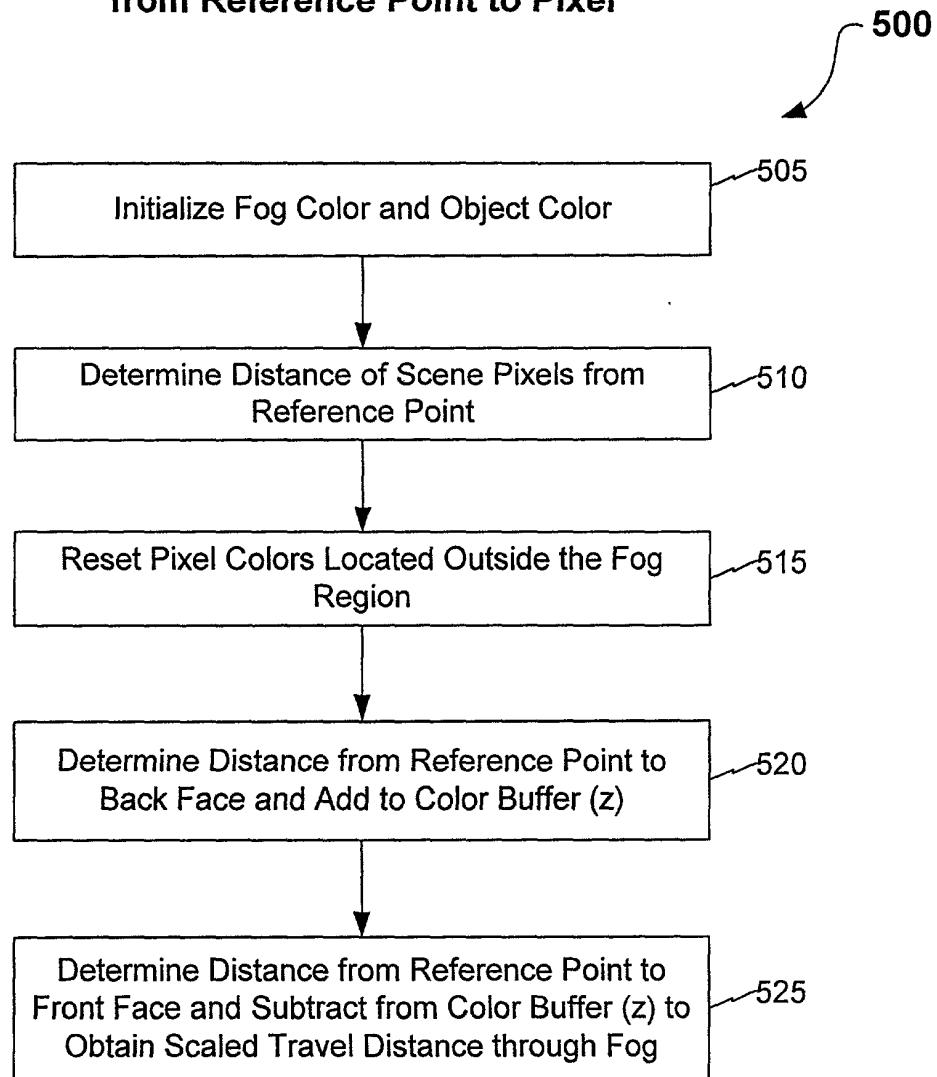


FIG. 5

Determine Distance of Scene Pixels From Reference Point

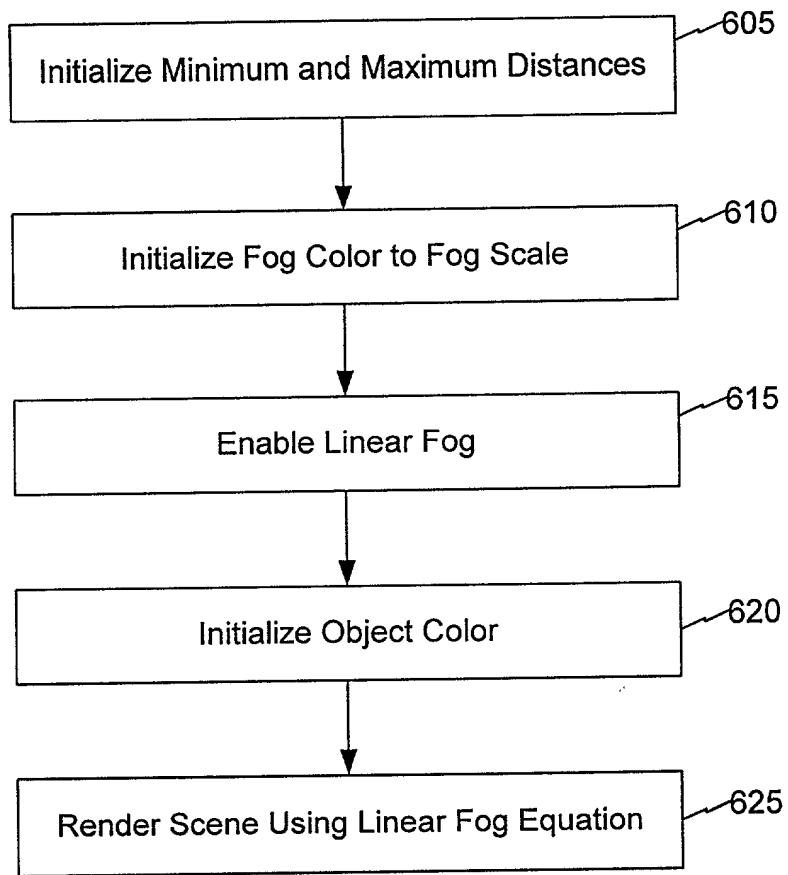


FIG. 6

Linear Fog Equation

Equation One (1)

$$\text{Attenuation Factor}(f) = \frac{\text{Maximum Distance} - \text{Pixel Distance}}{\text{Maximum Distance} - \text{Minimum Distance}}$$

Equation Two (2)

$$\text{Color} = f \cdot \text{Object Color} + (1-f) \cdot \text{Fog Color}$$

Equation Three (3)

$$\text{Color} = \frac{\text{Pixel Distance} - \text{Minimum Distance}}{\text{Maximum Distance} - \text{Minimum Distance}} \cdot \text{Fog Scale}$$

FIG. 7

Reset Pixel Colors Located Outside the Fog Region

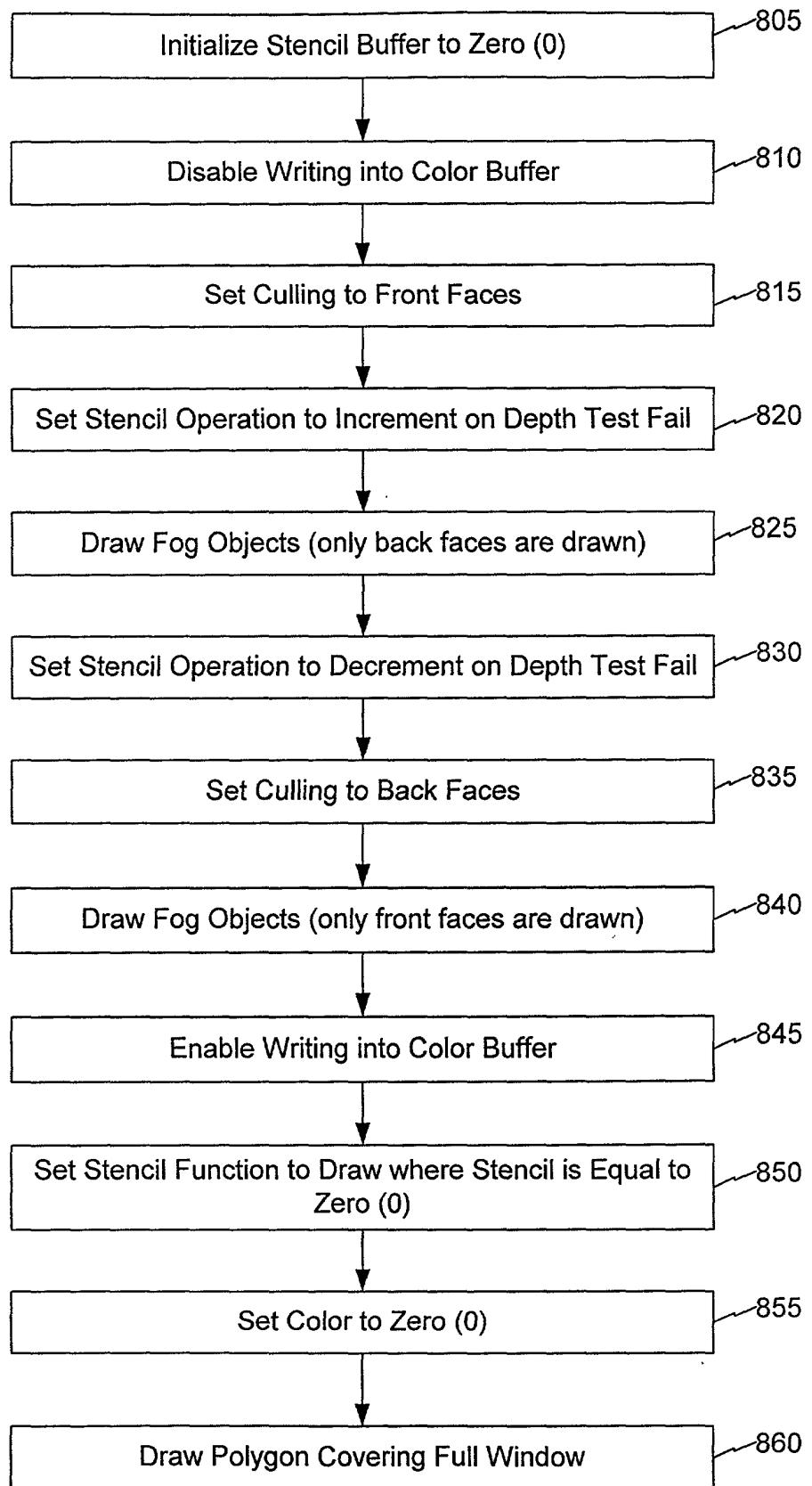


FIG. 8

**Determine Travel Distance through Fog Region
from Reference Point to Pixel**

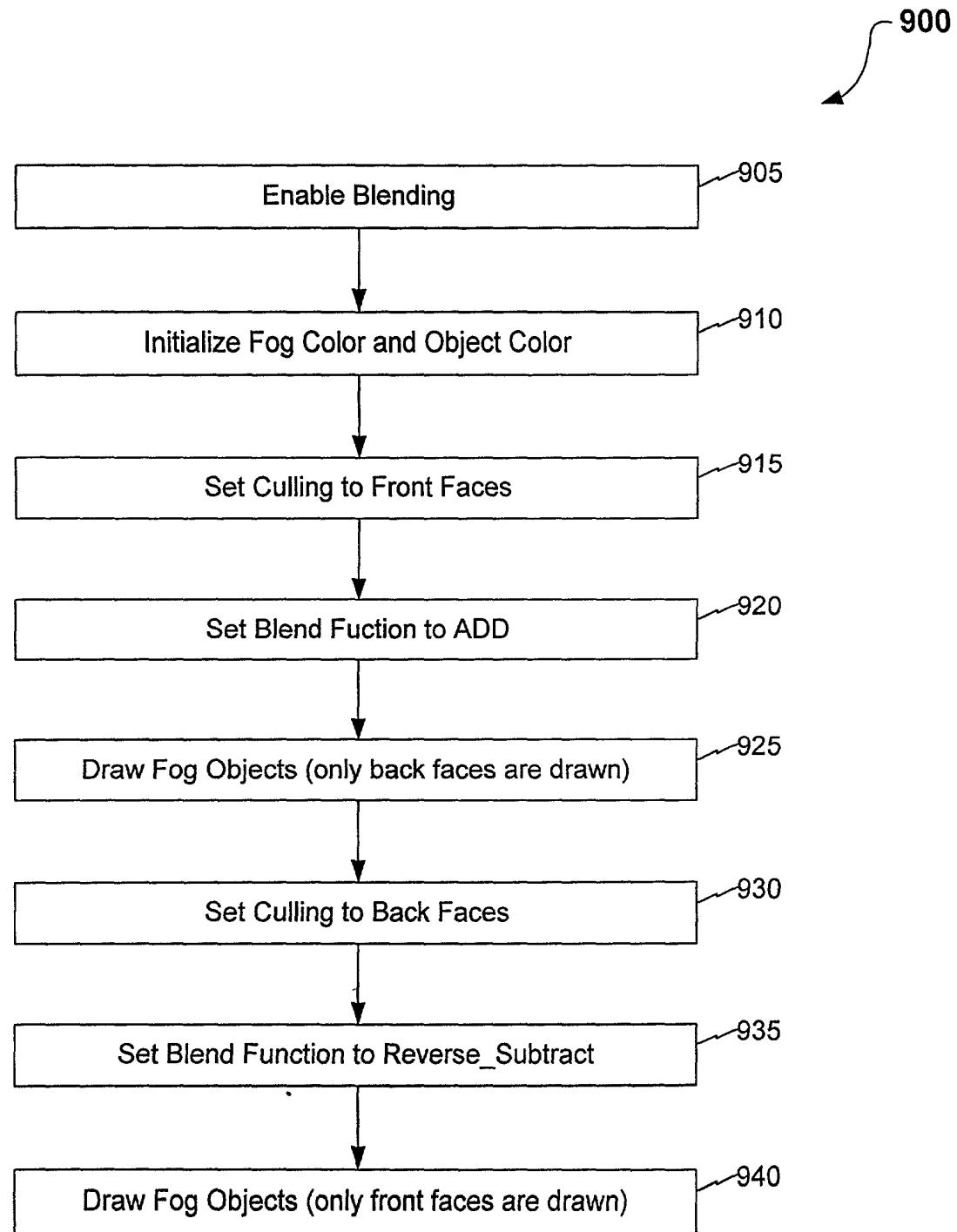


FIG. 9

Render Scene Based on Fog Factor

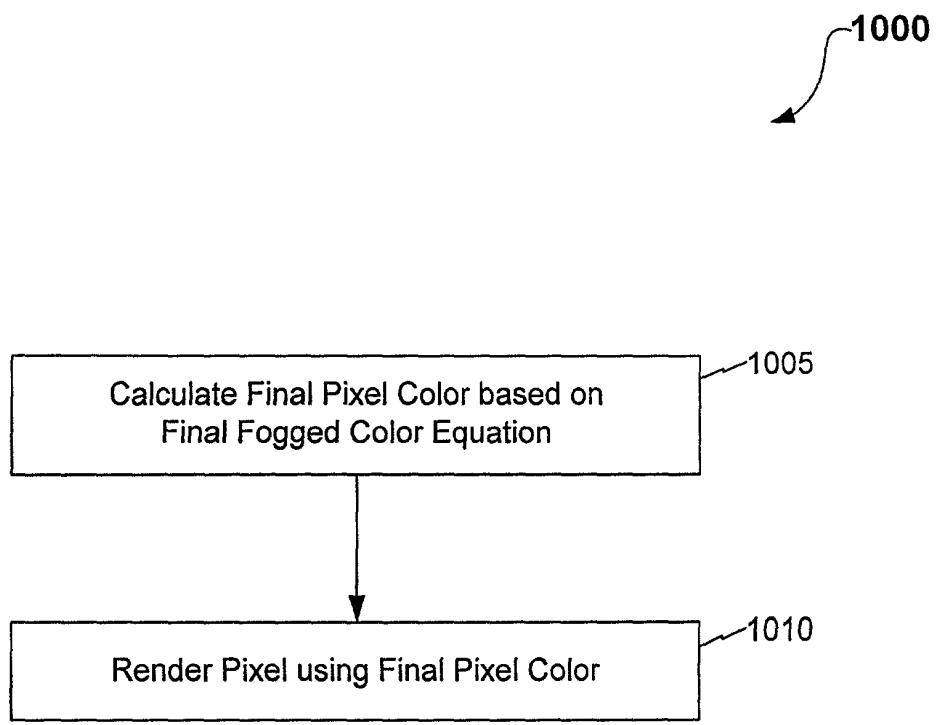


FIG. 10

Final Fogged Color Equation

Unfogged pixel color • fog factor + fog color • (1 - fog factor)

FIG. 11

Render Scene Based on Fog Factor

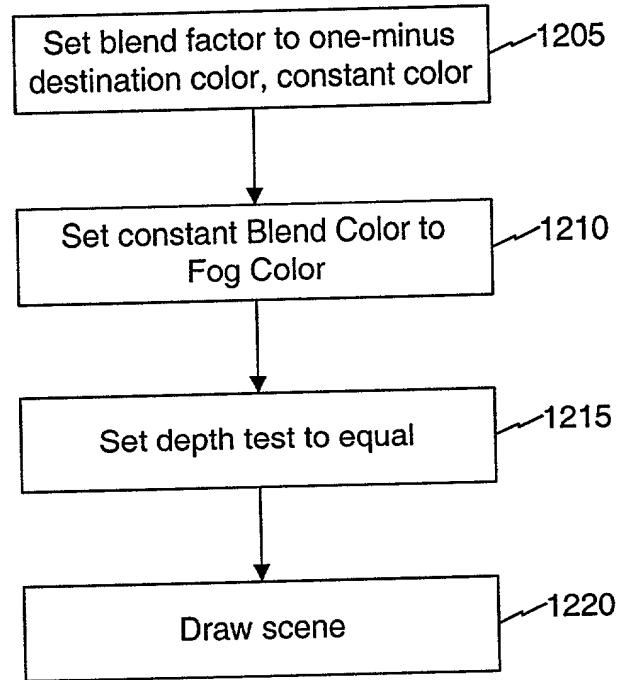


FIG. 12

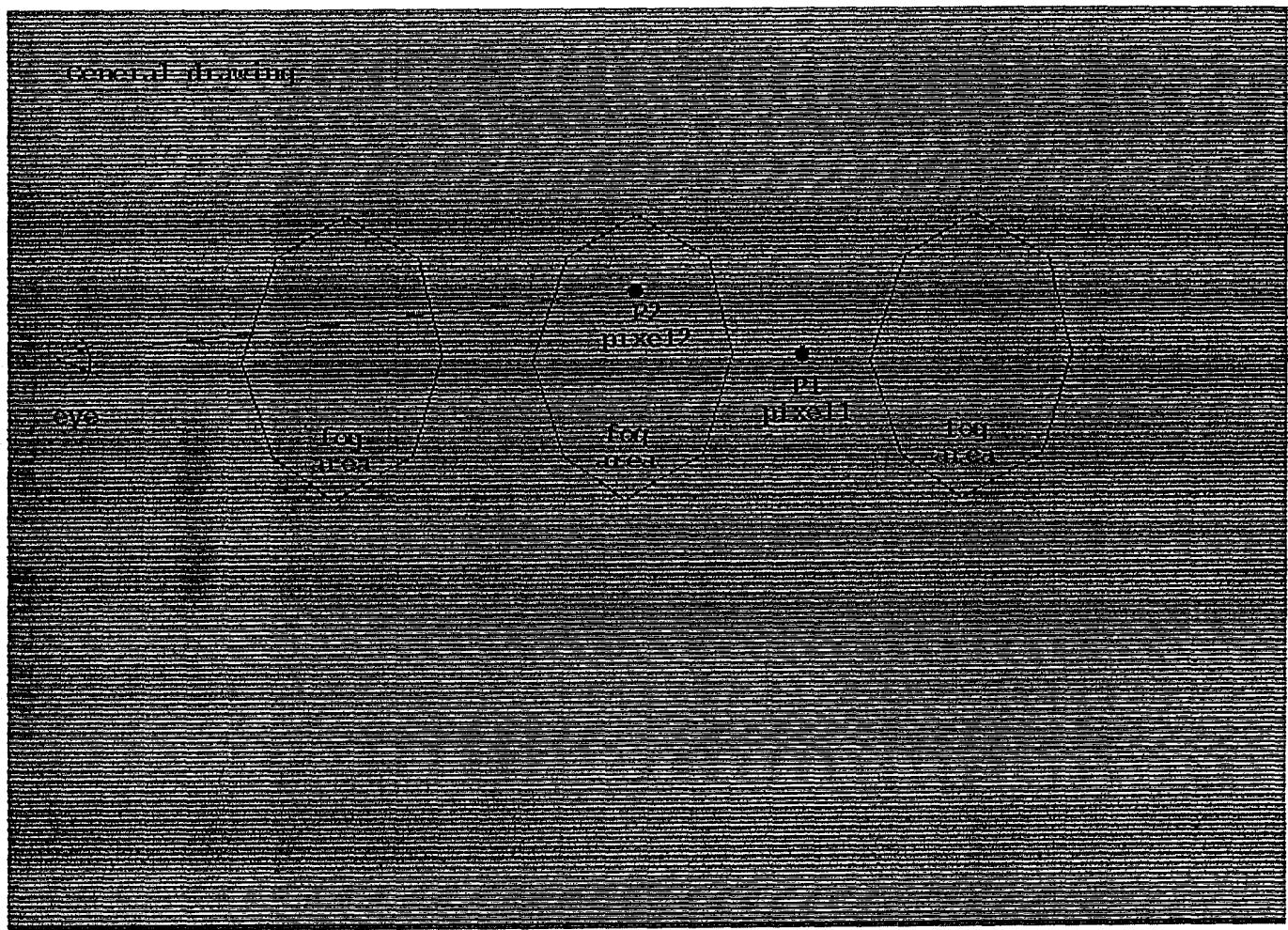


FIG. 13A

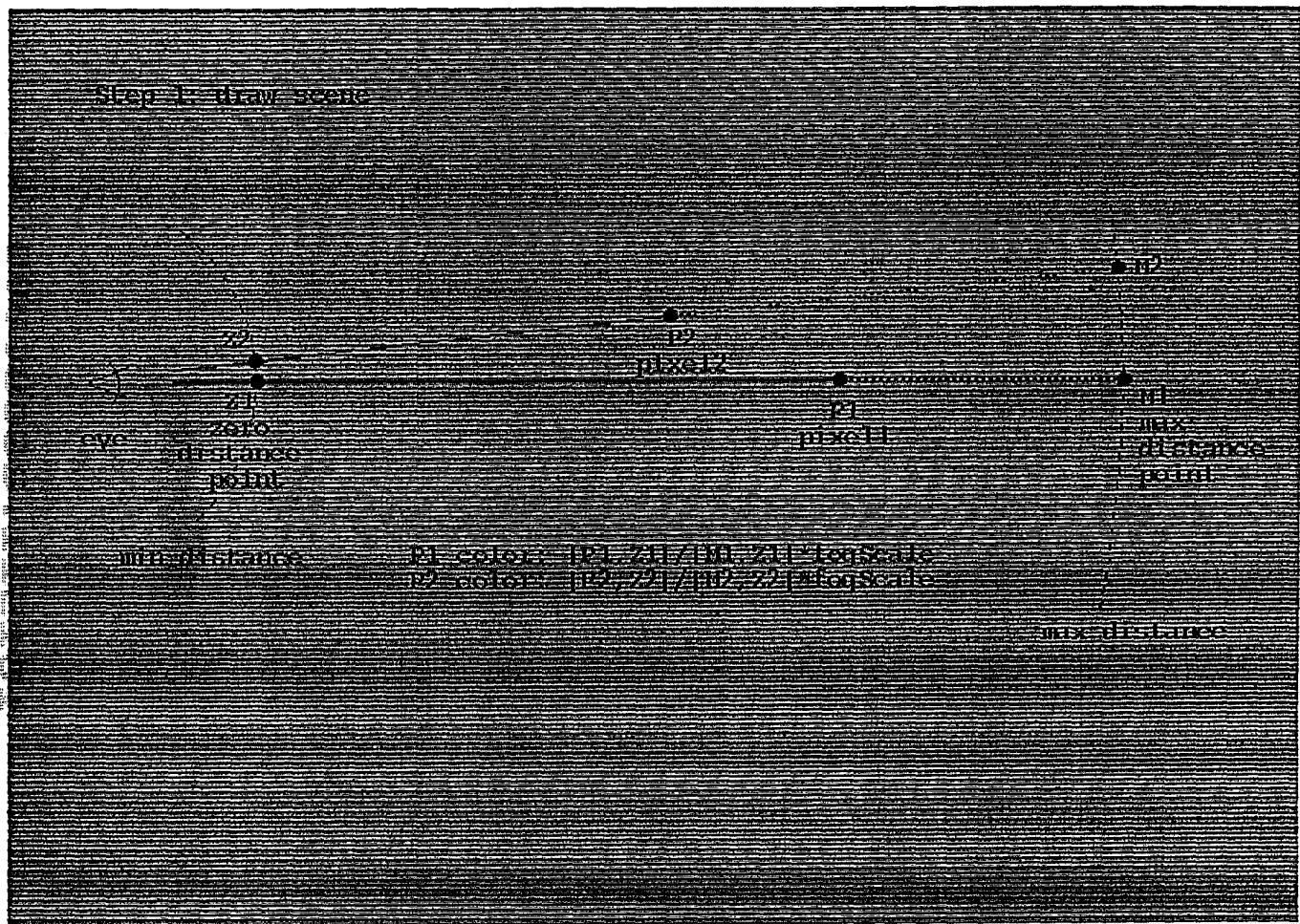


FIG. 13B

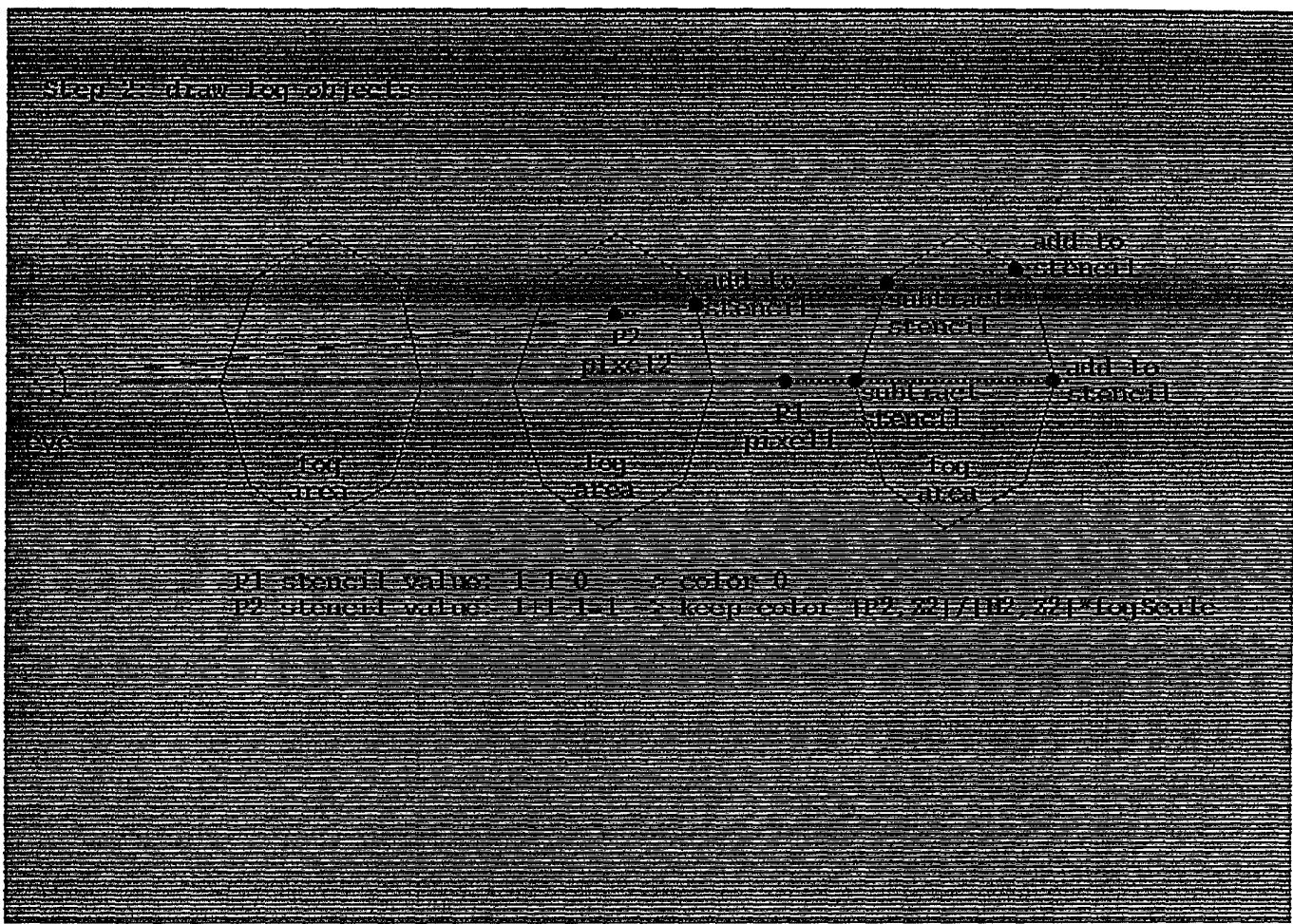


FIG. 13C

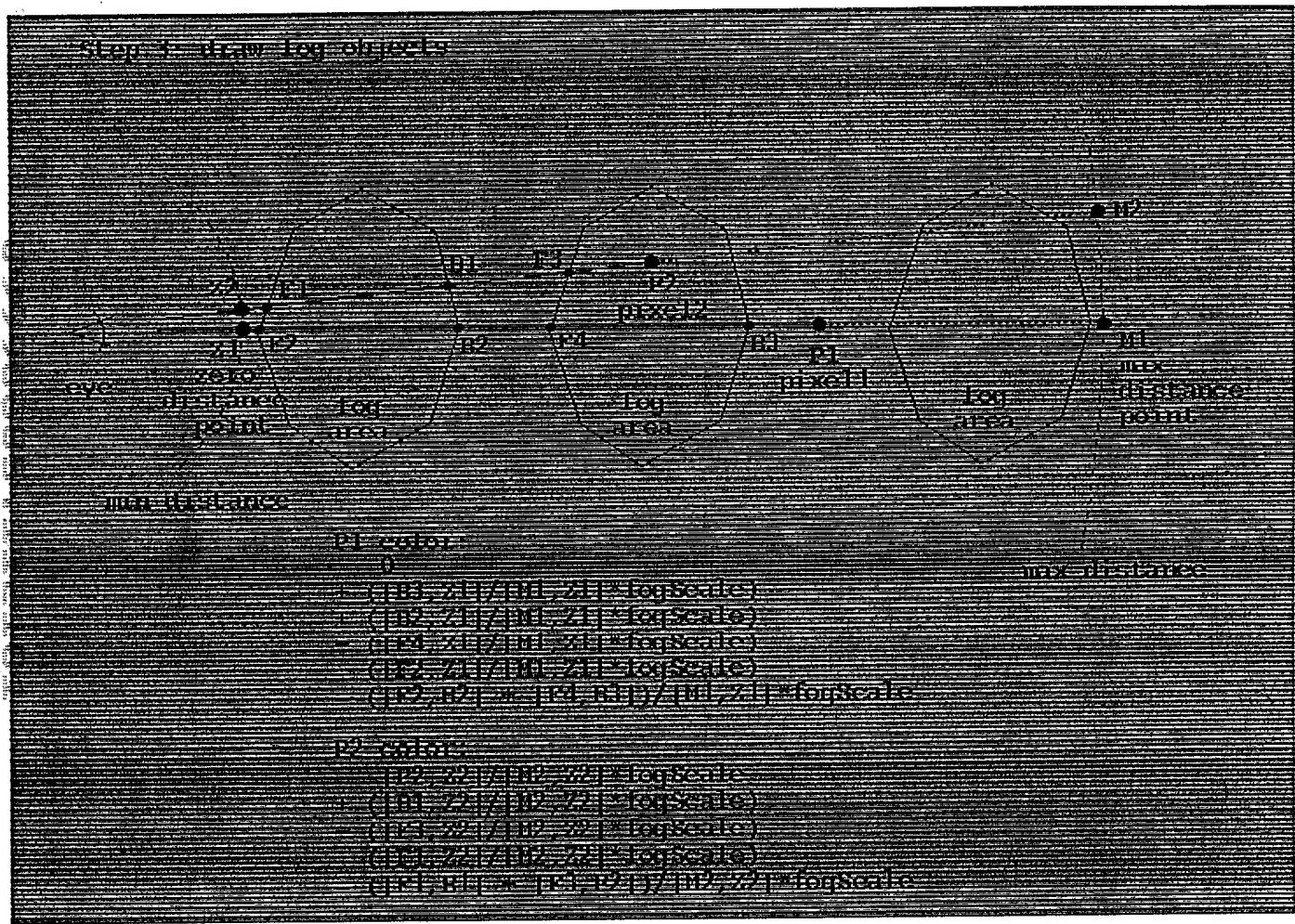


FIG. 13D

Step 4: convert pixel values

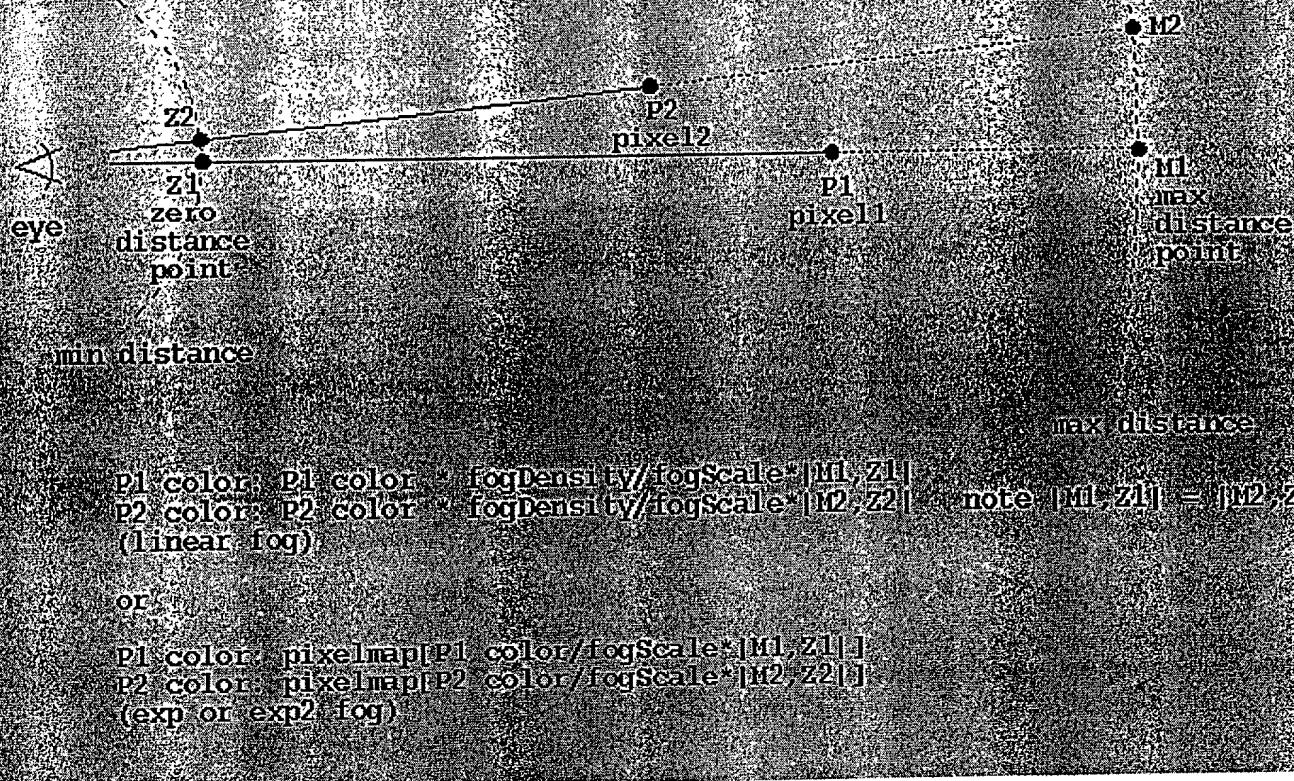


FIG. 13E

Step 1: Draw scene

Step 2: Draw scene

1. 1st sector - 14 scenes sector
2. 2nd sector - 13 scenes sector

1. 1st sector - 14 scenes sector
2. 2nd sector - 13 scenes sector

1. 1st sector - 14 scenes sector
2. 2nd sector - 13 scenes sector

FIG. 13F